CLAIMS

1. A method of assembling a microelectronic device assembly, comprising:
releasably attaching a support to a lead frame, the lead frame having a thickness and having an opening passing through the thickness, the support having an exposed surface spanning the opening;
releasably attaching a back surface of a microelectronic device to the exposed surface of the support;
electrically coupling the microelectronic device to the lead frame;
delivering an encapsulant to a cavity defined by the support, the microelectronic device, and a peripheral dam carried by the lead frame, the encapsulant bonding the microelectronic device to the lead frame; and
removing the support, leaving the back surface of the microelectronic device exposed.

2. The method of claim 1 further comprising cutting the lead frame within a periphery defined by the peripheral dam to separate a plurality of electrically isolated lead fingers.

3. The method of claim 1 further comprising positioning an upper mold element against an upper surface of the lead frame prior to delivering the encapsulant.

4. The method of claim 3 wherein the upper mold element, the peripheral dam, and the exposed surface define a mold for the encapsulant.

5. The method of claim 3 wherein an upper surface of the encapsulant is aligned with the upper surface of the lead frame.

6. The method of claim 1 wherein the active surface of the die is coupled to the lead frame by a plurality of bond wires.

7. The method of claim 6 wherein an upper surface of the encapsulant is aligned with the upper surface of the lead frame and the bond wires are encapsulated in the encapsulant.

8. The method of claim 1 wherein removing the support exposes a lower surface of each of a plurality of lead fingers.

9. The method of claim 1 wherein removing the support exposes a lower surface of each of a plurality of lead fingers, the exposed lower surfaces being peripherally aligned.

10. The method of claim 1 wherein removing the support exposes a lower surface of each of a plurality of lead fingers, the exposed lower surfaces of the lead fingers being staggered with respect to one another.

11. The method of claim 1 wherein the lead frame includes a plurality of lead fingers extending inwardly from the peripheral dam, the encapsulant being permitted to flow between the support and at least some of the lead fingers.

12. A method of assembling a microelectronic device assembly including a microelectronic die and a plurality of electrically independent lead fingers, comprising:

releasably attaching a first support to a back surface of a first lead frame and to a back surface of a first microelectronic die, the first lead frame including a front surface spaced from the back surface and an opening extending from the front surface to the back surface, the opening having an inner periphery defined by a first outer member and a plurality of first lead fingers extending inwardly from the first outer member, the first die being positioned in the opening with a periphery of the first die spaced inwardly of at least part of the inner periphery of the opening to define a first peripheral gap;

electrically coupling the first die to the first lead fingers with a plurality of first bonding wires;

filling the opening above the first support with a first encapsulant, the first encapsulant entering the first peripheral gap and attaching the first lead frame to the first die; and

removing the first support, leaving the back surface of the first die exposed and leaving the back surface of the first lead frame exposed.

13. The method of claim 12 further comprising separating the first lead fingers from the first outer member.

14. The method of claim 12 further comprising cutting the outer member from the first lead frame, yielding a plurality of independent first lead fingers connected to one another only by the first encapsulant and by the first bonding wires via the first die.

15. The method of claim 12 wherein the first support comprises an adhesive tape, the first lead frame and the first die being releasably adhered to the adhesive tape and the adhesive tape forming a seal against the back surface of the first lead frame and the back surface of the first die to retain the first encapsulant.

16. The method of claim 12 further comprising cutting the first lead frame to separate the first lead fingers from the first outer member.

17. The method of claim 12 further comprising:

releasably attaching a second support to a back surface of a second lead frame and to a back surface of a second microelectronic die, the second lead frame including a front surface spaced from the back surface and an opening extending from the front surface to the back surface, the opening having an inner periphery defined by a second outer member and a plurality of second lead fingers extending inwardly from the second outer member, the second die being positioned in the opening with a periphery of the second die spaced inwardly of at least part of an inner periphery of the opening to define a second peripheral gap;

electrically coupling the second die to the second lead fingers with a plurality of second bonding wires;

filling the opening above the second support with a second encapsulant, the second encapsulant entering the second peripheral gap and attaching the second lead frame to the second die;

removing the second support, leaving the back surface of the second die exposed and leaving the back surface of the second lead frame exposed; and

electrically coupling one of the first lead fingers to one of the second lead fingers.

18. The method of claim 17 wherein a plurality of the first lead fingers are electrically coupled to a plurality of the second lead fingers.

19. The method of claim 17 further comprising separating the first lead fingers from the first outer member and separating the second lead fingers from the second outer member.

20. The method of claim 19 wherein the first lead fingers are separated from the first outer member by cutting the lead frame prior to electrically coupling the first and second lead fingers.

21. The method of claim 19 wherein the first and second lead fingers are separated from the first and second outer members prior to electrically coupling the first and second lead fingers.

22. The method of claim 17 wherein electrically coupling the first and second lead fingers spaces the second die from the first encapsulant to define an intercomponent gap between the second die and the first encapsulant.

23. The method of claim 17 wherein the first lead finger is electrically coupled to the second lead finger by electrically coupling a front surface of the first lead finger to a back surface of the second lead finger.

24. A method of assembling a microelectronic device assembly including a microelectronic die and a plurality of electrically independent lead fingers, comprising:

releasably attaching a first support to a back surface of a first lead frame and to a back surface of a first microelectronic die, the first lead frame including a front surface spaced from the back surface and an opening extending from the front surface to the back surface, the opening having an inner periphery defined by a first outer member and a plurality of first lead fingers extending inwardly from the first outer member, the first die being positioned in the opening with a periphery of the first die spaced inwardly of at least part of an inner periphery of the opening to define a first peripheral gap;

electrically coupling the first die to the first lead fingers with a plurality of first bonding wires;

filling the opening above the first support with a first encapsulant, the first encapsulant entering the first peripheral gap and attaching the first lead frame to the first die;

removing the first support, leaving the back surface of the first die exposed and leaving the back surface of the first lead frame exposed; and

separating the first lead fingers from the first outer member.

25. The method of claim 24 wherein separating the first lead fingers from the first outer member comprises cutting the first lead frame within a periphery defined by the outer member.

26. The method of claim 24 wherein the first support comprises an adhesive tape, the first lead frame and the first die being releasably adhered to the adhesive tape and the adhesive tape forming a seal against the back surface of the first lead frame and the back surface of the first die to retain the first encapsulant.

27. The method of claim 24 further comprising:

releasably attaching a second support to a back surface of a second lead frame and to a back surface of a second microelectronic die, the second lead frame including a front surface spaced from the back surface and an opening extending from the front surface to the back surface, the opening having an inner periphery defined by a second outer member and a plurality of second lead fingers extending inwardly from the second outer member, the second die being positioned in the opening with a periphery of the second die spaced inwardly of at least part of an inner periphery of the opening to define a second peripheral gap;

electrically coupling the second die to the second lead fingers with a plurality of second bonding wires;

filling the opening above the second support with a second encapsulant, the second encapsulant entering the second peripheral gap and attaching the second lead frame to the second die;

removing the second support, leaving the back surface of the second die exposed and leaving the back surface of the second lead frame exposed;

separating the second lead fingers from the second outer member; and

electrically coupling one of the first lead fingers to one of the second lead fingers.

28. The method of claim 27 wherein a plurality of the first lead fingers are electrically coupled to a plurality of the second lead fingers.

29. The method of claim 27 wherein the first and second lead fingers are separated from the first and second outer members prior to electrically coupling the first and second lead fingers.

30. The method of claim 27 wherein electrically coupling the first and second lead fingers spaces the second die from the first encapsulant to define an intercomponent gap between the second die and the first encapsulant.

31. The method of claim 27 wherein the first lead finger is electrically coupled to the second lead finger by electrically coupling the front surface of the first lead finger to the back surface of the second lead finger.

32. A stacked microelectronic device assembly, comprising:

a first subassembly having a first thickness and comprising a plurality of electrically independent first lead fingers, a first die, and a first encapsulant bonding the first die to the first lead fingers, each of the first lead fingers having a thickness equal to the first thickness and defining an exposed front contact and an exposed back contact, the first die having an exposed back surface and being electrically coupled to the plurality of first lead fingers by a plurality of first bonding wires;

a second subassembly having a second thickness and comprising a plurality of electrically independent second lead fingers, a second die, and a second encapsulant bonding the second die to the second lead fingers, each of the second lead fingers having a thickness equal to the second thickness and defining an exposed front contact and an exposed back contact, the second die having an exposed back surface and being electrically coupled to the plurality of second lead fingers by a plurality of second bonding wires;

a plurality of electrical connectors, each of which electrically couples the exposed front contact of one of the first lead fingers to the exposed back contact of one of the second lead fingers.

33. The stacked microelectronic device assembly of claim 32 wherein an intercomponent gap is defined between the first and second subassemblies.

34. The stacked microelectronic device assembly of claim 32 further comprising a substrate, the first subassembly being attached to a mounting surface of the substrate.

35. The stacked microelectronic device assembly of claim 32 wherein the exposed back contacts of at least two of the first lead fingers are electrically coupled to the substrate.

36. A microelectronic device assembly, comprising:

a die having a front die surface, an exposed back die surface, and a die periphery extending between the front die surface and the back die surface;

a plurality of electrical leads, each of the electrical leads having a body extending between a front electrical contact and a back electrical contact;

a plurality of bonding wires, each of which electrically couples the die to one of the electrical leads;

an encapsulant having a front encapsulant surface and a back encapsulant surface, the encapsulant being bonded to the bonding wires, the front die surface, the peripheral die surface, and at least a portion of the body of each of the electrical leads, the front electrical contacts of the electrical leads being exposed adjacent the front encapsulant surface, the back electrical contacts of the electrical leads being exposed adjacent the back encapsulant surface in a staggered array.

37. The microelectronic device assembly of claim 36 wherein the staggered array comprises a first set of the back electrical contacts exposed adjacent a periphery of the back encapsulant surface and a second set of the back electrical contacts exposed at locations spaced inwardly from the periphery of the back encapsulant surface.

38. A microelectronic device assembly, comprising:

a die having a front die surface, an exposed back die surface, and a die periphery extending between the front die surface and the back die surface;

a plurality of first electrical leads, each of the first electrical leads having a body extending between a front electrical contact and a back electrical contact;

a plurality of second electrical leads, each of the second electrical leads having a body extending between a front electrical contact and a back electrical contact;

a plurality of bonding wires, each of which electrically couples the die to one of the inner electrical leads or to one of the outer electrical leads;

an encapsulant having a front encapsulant surface, a back encapsulant surface and a periphery, the encapsulant being bonded to the die and each of the

electrical leads, the front electrical contacts of the first and second electrical leads being exposed adjacent the front surface of the encapsulant, the back electrical contacts of the second electrical leads being exposed adjacent the back surface of the encapsulant, each of the back electrical contacts of the first electrical leads being spaced from the periphery of the encapsulant.